This review is not comprehensive. Be sure to study your notes, homework assignments and old tests as well.

1) Which equation is equivalent to $y = 10^x$?

A) $y = 10x$ B) $y = 10^{-x}$ C) $y = (\frac{1}{10})^x$ D) $y = (\frac{1}{10})^{-x}$

$y = (\frac{10}{1})^x$

2) The expression $(a^2)^3$ is equivalent to

A) a^5 B) $2a^5$ C) a^6 D) $3a^2$

3) The product of $3x^5$ and $2x^7$ is

A) $5x^{12}$ B) $6x^{12}$ C) $6x^{35}$ D) $5x^{35}$

4) The expression $\frac{8t^3s^{-5}}{4t^{-1}s^2}$, where $t \neq 0$ and $s \neq 0$, is equivalent to

A) $\frac{2t^4}{s^7}$ B) $\frac{2s^7}{t^4}$ C) $2t^2s^3$ D) $\frac{2t^2}{s^3}$

2) $(a^2)^3 = a^{2 \cdot 3} = a^6$

$a^2 \cdot a^3 = a^5$

$(a^2)^3 = a^6$ b/c $a^2 \cdot a^2 \cdot a^2 = a^6$

3) $(3x^5)(2x^7) = 6x^{5+7} = 6x^{12}$

4) $\frac{8t^3s^{-5}}{4t^{-1}s^2}$

$\frac{t^3}{t^{-1}} = t^{3-(-1)} = t^4$

$\frac{s^{-5}}{s^2} = s^{-5-2} = s^{-7} = \frac{1}{s^7}$

$\frac{2t^4}{s^7}$

5) Simplify: $\frac{3^{x+2}}{3^x}$ $= 3^{x+2-x} = 3^2 = 9$

A) $\frac{1}{9}$ B) $-\frac{1}{9}$ C) -9 D) 9

6) Simplify: $(5y)^0$ $= 5^0 \cdot y^0 = 1 \cdot 1 = 1$ $(\ )^0 = 1$

7) Simplify: -4^{-2}

8) Simplify: $(-2b^2)^2$

7) $-4^{-2} = -(4)^{-2} = -1(4)^{-2} = -\frac{1}{4^2} = \frac{-1}{16}$

8) $(-2b^2)^2$

$(-2)^2 \cdot (b^2)^2$

$4b^4$

9) Simplify and express with positive exponents: $4b^{-2}$ $= \frac{4}{b^2}$

10) Simplify: $c^{2x} \cdot c^{3x} = c^{2x+3x} = c^{5x}$

11) Simplify: $(x^n)^3(-5x^n)^2 =$ $(x^n)(x^n)(x^n)(-5x^n)(-5x^n)$

$25x^{5n}$

$(x^{3n})(-5)^2 \cdot (x^n)^2$

$(x^{3n})(25(x^{2n}))$ $\rightarrow$ $25(x^{2n+3n})$

$25x^{5n}$

12) Evaluate: $4^{\frac{3}{2}}$ ← Power, ← root

$\sqrt{4^3} = \sqrt{64}$

A) $\sqrt[3]{64}$ B) $(\sqrt{64})^3$ C) $\sqrt{64}$ D) $\sqrt[3]{16}$

13) If x is a positive integer, the expression $4x^{\frac{1}{2}}$ is equivalent to

A) $4\frac{1}{x}$ B) $4\sqrt{x}$ C) $2x$ D) $\frac{2}{x}$

14) Express with rational exponents: $\sqrt{3x}$

fractional

$= (3x)^{\frac{1}{2}}$

13) $4x^{\frac{1}{2}} = 4\sqrt{x^1}$

15) Express in radical form: $(2y)^{\frac{2}{3}}$ ← power, ← root

$\sqrt[3]{(2y)^2} = \sqrt[3]{4y^2}$

16) What is $\frac{3}{2+3i}$ expressed with a rational denominator?

A) $\frac{6-9i}{13}$ B) $\frac{-6+9i}{13}$ C) $\frac{-6-9i}{13}$ D) $\frac{6+9i}{13}$

17) The multiplicative inverse of $3-i$ is

A) $\frac{3+i}{8}$ B) $\frac{3-i}{8}$ C) $\frac{3+i}{10}$ D) $\frac{3-i}{10}$

16) Conjugate

$\frac{3}{2+3i} \cdot \frac{2-3i}{2-3i} = \frac{6-9i}{4-9i^2} = \frac{6-9i}{4-9(-1)} = \frac{6-9i}{4+9} = \frac{6-9i}{13}$

17) $3-i = \frac{3-i}{1}$ → Mult. Inverse $\frac{1}{3-i}$

$\frac{1}{3-i} \cdot \frac{3+i}{3+i} = \frac{3+i}{9-i^2} = \frac{3+i}{9-(-1)} = \frac{3+i}{10}$

18) Simplify in ~~$a+bi$~~ form: $\frac{3}{2-3i} \cdot \frac{2+3i}{2+3i} = \frac{6+9i}{4+9} = \frac{6+9i}{13}$

$\frac{6}{13} + \frac{9}{13}i$

19) Solve: $16^{x-\frac{3}{4}} = 4^{3x-5}$

A) 2 B) -2 C) $-\frac{7}{2}$ D) $\frac{7}{2}$

$(4^2)^{x-\frac{3}{4}} = 4^{3x-5}$

$2x - \frac{6}{4} = 3x - 5$

$-2x \quad -2x$

$-\frac{6}{4} = x - 5$

$+5 \quad +5$

$\frac{7}{2} = x$

$16 = 2^4 \qquad 4 = 2^2$

$(2^4)^{x-\frac{3}{4}} = (2^2)^{3x-5}$

$4x - 3 = 6x - 10$

$-4x \quad -4x$

$-3 = 2x - 10$

$+10 \quad +10$

$\frac{7}{2} = \frac{2x}{2}$

$\frac{7}{2} = x$

20) Solve: $27^x = 9^{x+2}$

$27 = 3^3$ $\quad 9 = 3^2$

$(3^3)^x = (3^2)^{x+2}$

$3x = 2x + 4$

$-2x \quad -2x$

$x = 4$

21) Solve: $2^{x+3} = 64$

$64 = 2^6$

$2^{x+3} = 2^6$

$x + 3 = 6$

$-3 \quad -3$

$x = 3$

2×2

4×2

8×2

16×2

32×2

64

STUDY!!

Ex: Write in radical form

$4x^{\frac{2}{5}}$ ← power, ← root

$4\sqrt[5]{x^2}$

In simplest a+bi form

$$\frac{2}{1+i} \cdot \frac{1-i}{1-i} = \frac{2-2i}{1-i^2} = \frac{2-2i}{1-(-1)} = \frac{2-2i}{1+1} = \frac{2-2i}{2}$$

$$\frac{2}{2} - \frac{2}{2}i$$

$$\boxed{1-1i}$$

$\frac{3^{x+2}}{3^{x}}$

Subtract Exponents

$(x+2)-x$

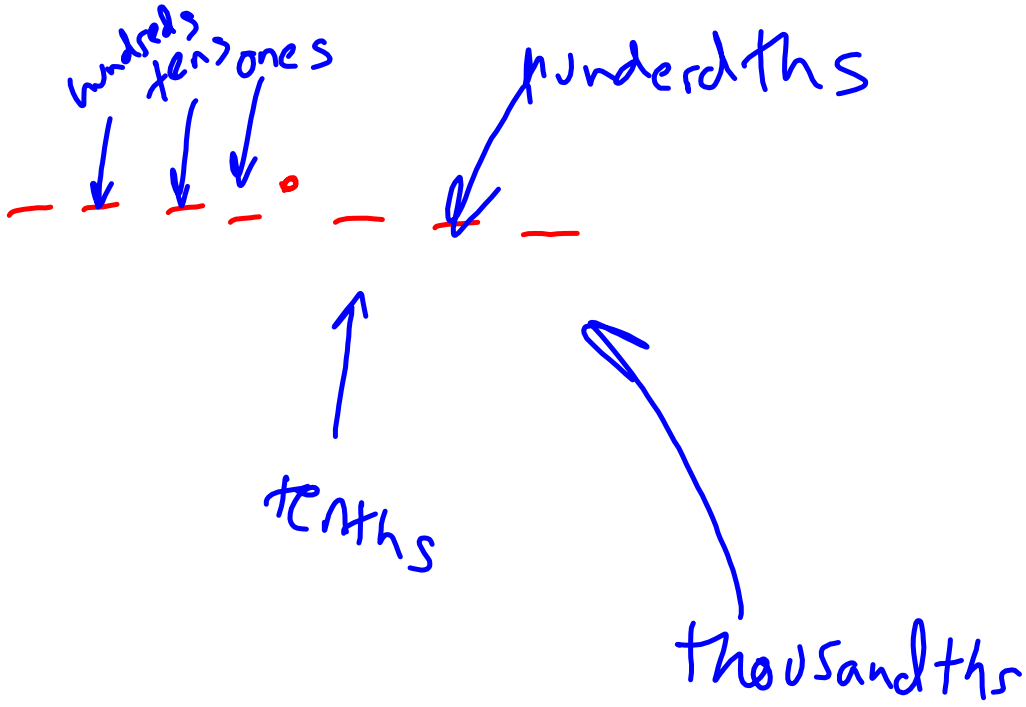
$x+2-x=2$

$3^2=9$

$$\frac{3^{x+2}}{3^x} = \frac{3^x \cdot 3^2}{3^x} = 3^2 = 9$$

rewrite:

$$-4^{-2} = -1(4)^{-2} = -\frac{1}{4^2} = -\frac{1}{16}$$


hundreds
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$(-2b^2)^2$

$(-2b^2)(-2b^2)$

$4b^4$